CellAdvisor™

JD748A Signal Analyzer

Spectrum Analyzer (Standard)

Frequency		
Frequency range	100 kHz to 4 GHz	
Internal 10 MHz Frequency Reference		
Accuracy	±0.05 ppm + aging (0 to 50°C)	
Aging	±0.5 ppm/year	
Frequency Span		
Range	0 Hz (zero span) 10 Hz to 4 GHz	
Resolution	1 Hz	
Resolution Bandwidth (RBW)		
–3 dB bandwidth	1 Hz to 3 MHz	1-3-10 sequence
Accuracy	±10% (nominal)	
Video Bandwidth (VBW)		
–3 dB bandwidth	1 Hz to 3 MHz	1-3-10 sequence
Accuracy	±10% (nominal)	
Single Sideband (SSB) Phase Noise		
Fc 1 GHz, RBW 10 kHz, VBW 1 kHz, RMS detector		
Carrier Offset 30 kHz 100 kHz 1 MHz	 <–90 dBc/Hz (typical) <–95 dBc/Hz (typical) <–102 dBc/Hz (typical)	
Measurement Range		
DANL to +20 dBm		
Input attenuator range	0 to 50 dB, 5 dB steps	
Maximum Input Level		
Average continuous power	+20 dBm	
DC voltage	±50 V DC	

Spectrum Analyzer: 100 kHz to 4 GHz

Power Meter: 10 MHz to 4 GHz

Specification Conditions

The JD748A specifications apply under these conditions:

- The instrument has been turned on for at least 15 minutes
- The instrument is operating within a valid calibration period
- Data with no tolerance are considered typical values
- Cable and antenna measurements apply after calibration to the OSL standard
- Typical and nominal values are defined as:
  - Typical: expected performance of the instrument operating at 20 to 30°C after being at this temperature for 15 minutes
  - Nominal: a general, descriptive term or parameter

Displayed Average Noise Level (DANL)		
1 Hz RBW, 1 Hz VBW, 50 Ω termination, 0 dB attenuation, RMS detector		
Preamplifier Off 10 MHz to 2.3 GHz >2.3 GHz to 3 GHz >3 GHz to 4 GHz	 –140 dBm (–146 dBm, typical) –138 dBm (–144 dBm, typical) –135 dBm (–140 dBm, typical)	
Preamplifier On 10 MHz to 2.3 GHz >2.3 GHz to 3 GHz >3 GHz to 4 GHz	 –155 dBm (–160 dBm, typical) –153 dBm (–158 dBm, typical) –150 dBm (–156 dBm, typical)	
Display Range		
Log scale and units (10 divisions displayed)	1 to 20 dB/division in 1 dB steps dBm, dBV, dBmV, dBµV	
Linear scale and units (10 divisions displayed)	V, mV, mW, W	
Detectors	Normal, positive peak, sample, negative peak, RMS	
Number of traces	6	
Trace functions	Clear/write, maximum hold, minimum hold, capture, load view on/off	
Total Absolute Amplitude Accuracy		
Preamplifier off, power level >–50 dBm, auto-coupled (20 to 30°C)		
5 MHz to 4 GHz	±1.25 dB, ±0.5 dB (typical)	Attenuation <40 dB
	±1.55 dB, ±1.0 dB (typical)	Attenuation ≥40 dB
Reference Level		
Setting range	–120 to +100 dBm	
Setting Resolution Log scale Linear scale	 0.1 dB 1% of reference level	
Markers		
Marker types	Normal, delta, delta pair, noise, frequency count marker	
Number of markers	6	
Marker functions	Peak, next peak, peak left, peak right, minimum search marker to center/ start/stop	
RF Input VSWR		
20 MHz to 4 GHz	1.5:1 (typical)	
Second Harmonic Distortion		
Mixer level	–25 dBm	
10 MHz to 1.3 GHz	<–65 dBc (typical)	
>1.3 GHz to 4 GHz	<–70 dBc (typical)	
Third-Order Inter-Modulation (Third-Order Intercept: TOI)		
200 MHz to 2 GHz	+10 dBm (typical)	
>2 GHz to 4 GHz	+12 dBm (typical)	

Spurious		
Inherent residual response Input terminated, 0 dB attenuation, preamplifier off, RBW at 10 kHz		
20 MHz to 3 GHz	–90 dBm (nominal)	
>3 GHz to 4 GHz	–85 dBm (nominal)	
Exceptions	<–80 dBm at 311.94 MHz <–84 dBm at 415.92 MHz <–85 dBm at 519.90, 1599.00, and 2497.80 MHz	
Input-related spurious	<–70 dBc (nominal)	
Dynamic Range		
2/3 (TOI-DANL) in 1 Hz RBW	>95 dB	
Sweep Time		
Range	80 ms to 1000 s 24 µs to 200 s	 Span = 0 Hz (zero span)
Accuracy	±2%	Span = 0 Hz (zero span)
Mode	Continuous, single	
Gated Sweep		
Trigger source	External, video, and GPS	
Gate length	1 µs to 100 ms	
Gate delay	0 to 100 ms	
Trigger		
Trigger source	Free run, video, external	
Trigger Delay Range Resolution	 0 to 200 s 6 µs	
Measurements		
Channel power		
Occupied bandwidth		
Spectrum emission mask		
Adjacent channel power		
Spurious emissions		
Field strength		
AM/FM audio demodulation		
Route map		
PIM detection		
Dual spectrum		

RF Power Meter (Standard)

General Parameters			
Display range	100 to +100 dBm		
Offset range	0 to 60 dB		
Resolution	0.01 dB or 0.1 x W (x = m, u, p)		
Internal RF Power Sensor			
Frequency range	10 MHz to 4 GHz		
Span	100 kHz to 100 MHz		
Dynamic range	–120 to +20 dBm		
Maximum power	+20 dBm		
Accuracy	Same as spectrum analyzer		
External RF Power Sensors			
Directional	**JD731B**	**JD733A**	
Frequency range	300 MHz to 3.8 GHz	150 MHz to 3.5 GHz	
Dynamic range	0.15 to 150 W (average) 4 to 400 W (peak)	0.1 to 50 W (average) 0.1 to 50 W (peak)	
Connector type	Type-N female on both ends		
Measurement type	Forward/reverse average power, forward peak power, VSWR		
Accuracy	±(4% of reading + 0.05 W)[1,2]		
Terminating	**JD732B**	**JD734B**	**JD736B**
Frequency range	20 MHz to 3.8 GHz		
Dynamic range	–30 to +20 dBm		
Connector type	Type-N male		
Measurement type	Average	Peak	Average and peak
Accuracy	±7%[1]		

Optical Power Meter (Standard)

Optical Power Meter		
Display range	–100 to +100 dBm	
Offset range	0 to 60 dB	
Resolution	0.01 dB or 0.1 mW	
External Optical Power Sensors		
	MP-60A	**MP-80A**
Wavelength range	780 to 1650 nm	
Max permitted input level	+10 dBm	+23 dBm
Connector type	Type-N female on both ends	
Connector input	Universal 2.5 and 1.25 mm	
Accuracy	±5%	

1. CW condition at 25°C ±10°C
2. Forward power

GPS Receiver and Antenna (Option 010)

GPS Indicator		
Latitude, longitude, altitude		
High-Frequency Accuracy		
Spectrum, interference, and signal analyzer		
GPS lock	±25 ppb	
Hold over (for 3 days)	±50 ppb (0 to 50°C)	15 minutes after satellite locked
Connector	SMA, female	

Interference Analyzer (Option 011)

Measurements	
Spectrum analyzer	Sound indicator, AM/FM audio demodulation, interference ID, spectrum recorder
Spectrogram	Collect up to 72 hours of data
RSSI	Collect up to 72 hours of data
Interference finder	
Spectrum replayer	
Dual spectrogram	

Channel Scanner (Option 012)

Frequency Range	
10 MHz to 4 GHz	
Measurement Range	
110 to +20 dBm	
Measurements	
Channel scanner	1 to 20 channels
Frequency scanner	1 to 20 frequencies
Custom scanner	1 to 20 channels or frequencies

GSM/GPRS/EDGE Signal Analyzer (Options 022 and 042)

General Parameters		
Frequency range	450 MHz to 500 MHz 820 MHz to 965 MHz 1.705 GHz to 1.995 GHz	
Input signal range	–40 to +20 dBm	
Burst power	±1.0 dB	
Frequency error	±10 Hz + reference-frequency accuracy	99% confidence level
GMSK modulation quality		
Phase RMS Accuracy Residual error Phase peak accuracy 8 PSK modulation quality	 ±1.0 degrees 0.7 degrees (typical) ±2.0 degrees	 (0 < Phase RMS < 8) (0 < Phase peak < 30)
EVM Accuracy Residual error RF power vs. time	±1.5% 2.5% ±0.25 symbol	(2% < EVM < 8%)

Measurements					
Option 022					
Channel power	Reference power	Frame average power	I/Q origin offset*	Occupied bandwidth	EVM RMS*
Channel power	Peak level at defined range	Burst power (Slot 0 to 7)	TSC	Spectrum emission mask	EVM Peak*
Spectral density	***Spurious emissions***	TSC (Slot 0 to 7)	BSIC	Spurious emission mask	I/Q origin offset
Peak to average power	Peak frequency at defined range	***Constellation***	C/I*	Burst power	C/I*
Occupied bandwidth	Peak level at defined range	Burst power	EVM RMS*	PvsT – Mask	
Occupied bandwidth	***Power vs. time (slot)***	Modulation type	EVM Peak*	Frame average power	
Integrated power	Burst power	Frequency error	EVM 95th*	Frequency error	
Occupied power	Max/min point	Phase error RMS	***Auto measure***	Phase error RMS	
Spectrum emission mask	***Power vs. time (frame)***	Phase error peak	Channel power	Phase error peak	
Option 042					
Channel/frequency scannera	Group (traffic, control)	(10 strongest)	***Modulation analyzer***	Frame average power	Burst power
Channels or frequencies	BSIC (NCC, BCC)	Frame average power	Frame avg power trend	BSIC, frame no. and time	Modulation type
Absolute power	***Multipath profile***	SNR, delay	C/I trend	C/I, frequency error	

Longitude, latitude, and satellite in all screens

* Measurements performed for 8PSK modulation signals (edge) only.

WCDMA/HSPA+ Signal Analyzer (Options 023 and 043)

General Parameters		
Frequency range	Band 1 to 14, 19 to 22, 25, 26	
Input signal range	−40 to +20 dBm	
RF channel power accuracy	±1.0 dB, ±0.7 dB (typical)	
Occupied bandwidth accuracy	±100 kHz	
Adjacent channel leakage ratio (ACLR)	<−56 dB, ±0.7 dB at 5 MHz offset, <−58 dB, ±0.8 dB at 10 MHz offset	
WCDMA modulation	QPSK	
HSPA+ modulations	QPSK, 16 QAM, 64 QAM	
Frequency error	±10 Hz + reference-frequency accuracy	99% confidence level
EVM accuracy	±2.0%	2% ≤ EVM ≤ 20%
Residual EVM	2.5% (typical)	
Code domain power	±0.5 dB relative power ±1.5 dB absolute power	Code channel power >−25 dB Code channel power >−25 dB
CPICH power accuracy	±0.8 dB (typical)	

Measurements

Option 023

Channel power	Abs power at defined range	Peak CDE	***Relative code domain error***	Code utilization	EVM
Channel power	Rel power at defined range	Frequency error	Abs/Rel code power	Code, spreading factor	Peak CDE
Spectral density	***Multi-ACLR***	Time offset	Code error	Allocation (channel type)	Carrier feed-through
Peak to average power	Lowest reference power	Carrier feed-through	Individual code EVM, RCDE, and its constellation	EVM, modulation type	CPICH absolute power
Occupied bandwidth	Highest reference power	Scramble code	Channel power	Relative, absolute power	CPICH relative power
Occupied bandwidth	Abs power at defined range	***Code domain power***	Power bar graph (Abs/Rel/Delta power) CPICH, P-CCPCH, S-CCPCH, PICH, P-SCH, S-SCH	***Auto measure***	Max inactive power
Integrated power	Rel power at defined range	Abs/Rel code power	Avg RCDE QPSK, 16 QAM, 64 QAM	Channel power	Scramble code
Occupied power	***Spurious emissions***	Individual code EVM and its constellation	***Codogram***	Occupied bandwidth	***Power statistics CCDF***
Spectrum emission mask	Peak frequency at defined range	Channel power	Code utilization	Spectrum emission mask	
Reference power	Peak level at defined range	Power bar graph (Abs/ Rel/Delta power) CPICH, P-CCPCH, S-CCPCH PICH, P-SCH, S-SCH	***RCSI***	ACLR	
Peak level at defined range	***Constellation***	Max, avg active power	CPICH, P-CCPCH, S-CCPCH, PICH, P-SCH, S-SCH	Multi-ACLR	
ACLR	CPICH power	Max, avg inactive power	***CDP table***	Spurious emission mask	
Reference power	Rho, EVM	Scramble code	Reference power	Frequency error	

Option 043

Channel scanner (up to 6)	Scramble code	Abs/Rel code power	Max, avg inactive power	Amplifier capacity	CPICH power, Ec/Io
Frequencies or channels	Ec/Io, CPICH power, delay	Individual code EVM	Frequency error	Peak amplifier capacity	
Channel power, scramble code, CPICH power, Ec/Io	***Multipath profile***	Channel power	Time offset, Rho	Average amplifier capacity	
Scramble scanner (up to 6)	Channel, multipath power	Scramble code	Carrier feed-through	Code, peak utilization	
Channel power	Ec/Io, delay	CPICH, P-CCPCH, S-CCPCH, PICH, P-SCH, S-SCH	(Composite) EVM	Average utilization	
CPICH dominance	***Code domain power***	Max, avg active power	CPICH EVM, P-CCPCH EVM	***Route map***	

Longitude, latitude, and satellite in all screens

cdmaOne/cdma2000® Signal Analyzer (Options 020 and 040)

General Parameters		
Frequency range	Band 0 to 10	
Input signal level	–40 to +20 dBm	
RF channel power accuracy	±1.0 dB (typical)	
CDMA compatibility	cdmaOne and cdma2000	
Frequency error	±10 Hz + ref freq accuracy	99% confidence level
Rho accuracy	±0.005	0.9 < Rho < 1.0
Residual Rho	>0.995 (typical)	
PN offset	1 x 64 chips	
Code domain power	±0.5 dB relative power ±1.5 dB absolute power	Code channel power >–25 dB Code channel power >–25 dB
Pilot power accuracy	±1.0 dB (typical)	
Time offset	±1.0 µs, ±0.5 µs (typical)	External trigger

Measurements					
Option 020					
Channel power	Reference power	Pilot power	Max, avg active power	Relative, absolute power	Max inactive power
Channel power	Abs power at defined range	Rho	Max, avg inactive power	***Auto measure***	PN offset
Spectral density	Rel power at defined range	EVM	PN offset	Channel power	***Power statistics CCDF***
Peak to average power	***Multi-ACPR***	Frequency error	***Codogram***	Occupied bandwidth	
Occupied bandwidth	Lowest reference power	Time offset	Code utilization	Spectrum emission mask	
Occupied bandwidth	Highest reference power	Carrier feed-through	***RCSI***	ACPR	
Integrated power	Abs power at defined range	PN offset	Pilot, Paging, Sync, Q-Paging	Multi-ACPR	
Occupied power	Rel power at defined range	***Code domain power***	***CDP table***	Rho	
Spectrum emission mask	***Spurious emissions***	Abs/Rel code power	Reference power	Frequency error	
Reference power	Peak freq at defined range	Channel power	Code utilization	Time offset	
Peak level at defined range	Peak level at defined range	Power bar graph (Abs/Rel)	Code, spreading factor	Carrier feed-through	
ACPR	***Constellation***	Pilot, Paging, Sync, Q-Paging	Allocation (channel type)	Pilot power	
Option 040					
Channel scanner (up to 6)	Pilot dominance	Ec/Io, delay	Max, avg active power	Peak amplifier capacity	Pilot power
Frequencies or channels	PN offset	***Code domain power***	Max, avg inactive power	Average amplifier capacity	Ec/Io
Channel power, PN offset	Ec/Io, pilot power, delay	Abs/Rel code power	Frequency error	Code utilization	
Pilot power, Ec/Io	***Multipath profile***	Channel power	Time offset, Rho, EVM	Peak utilization	
PN scanner (up to 6)	Channel power	PN offset	Carrier feed-through	Average utilization	
Channel power	Multipath power	Pilot, Paging, Sync, Q-Paging power	Amplifier capacity	***Route map***	

Longitude, latitude, and satellite in all screens

EV-DO Signal Analyzer (Options 021 and 041)

General Parameters		
Frequency range	Band 0 to 10	
Input signal level	−40 to +20 dBm	
RF channel power accuracy	±1.0 dB (typical)	
EV-DO compatibility	Rev 0, Rev A and Rev B	
Frequency error	±10 Hz + ref freq accuracy	99% confidence level
Rho accuracy	±0.005	0.9 < Rho < 1.0
Residual Rho	>0.995 (typical)	
PN offset	1 x 64 chips	
Code domain power	±0.5 dB relative power ±1.5 dB absolute power	Code channel power >−25 dB Code channel power >−25 dB
Pilot power accuracy	±1.0 dB (typical)	
Time offset	±1.0 µs, ±0.5 µs (typical)	External trigger

Measurements

Option 021

Channel power	***Multi-ACPR***	Channel power	Modulation type*	***MAC codogram***	Multi-ACPR
Channel power	Lowest reference power	Rho, EVM, Peak CDE	***Code domain power (pilot and MAC 64/128)***	Code utilization	Pilot, MAC, data power
Spectral density	Highest reference power	Frequency error	Pilot/MAC channel power	***RCSI***	On/off ratio
Peak to average power	Abs power at defined range	Time offset	Slot average power	Slot, pilot, MAC, data	PvsT mask (idle slot) or PvsT mask (active slot)
Occupied bandwidth	Rel power at defined range	Carrier feed-through	Max active I/Q power	***MAC CDP table***	Frequency error
Occupied bandwidth	***Spurious emissions***	PN offset	Avg active I/Q power	Reference power	Time offset
Integrated power	Peak frequency at defined range	Pilot, MAC, data power	Max inactive I/Q power	Code utilization	Carrier feed-through
Occupied power	Peak level at defined range	Pilot, MAC, data EVM	Avg inactive I/Q power	Code, spreading factor	Pilot, MAC, data Rho
Spectrum emission mask	***Power vs. time (idle and active slot)***	***Constellation (pilot, MAC 64/128, and data)***	PN offset	Allocation (channel type)	Max inactive I/Q power
Reference power	Slot average power	Channel power	***Code domain power (data)***	Relative, absolute power	PN offset
Peak level at defined range	On/off ratio	Rho, EVM, peak CDE	Data channel power	***Auto measure***	***Power statistics CCDF***
ACPR	Idle activity	Frequency error	Slot average power	Channel power	
Reference power	Peak level at defined range	Time offset	Max, avg active power	Occupied bandwidth	
Abs power at defined range	Pilot, MAC, data power	Carrier feed-through	Max, avg inactive power	Spectrum emission mask	
Rel power at defined range	***Constellation (composite 64/128)***	PN offset	PN offset	ACPR	

Option 041

Channel scanner (up to 6)	Channel power	Channel power	PN offset	Time offset	Peak utilization
Frequencies or channels	Pilot dominance	Multipath power	Pilot, MAC, data power	Carrier feed-through	Average utilization
PN offset	PN offset	Ec/Io, delay	Pilot, MAC, data Rho	Max active I/Q power	***Route map***
Pilot, MAC, data power	Ec/Io, pilot power, delay	***Code domain power***	(Composite) EVM	Avg active I/Q power	Pilot power
PN scanner (up to 6)	***Multipath profile***	Slot average power	Frequency error	Code utilization	Ec/Io

Longitude, latitude, and satellite in all screens

*Measurement is performed in Data Constellation only.

TD-SCDMA Signal Analyzer (Options 025 and 045)

General Parameters		
Frequency range	1.785 GHz to 2.22 GHz	
Input signal level	−40 to +25 dBm	
Channel power (RRC) accuracy	±1.0 dB (typical)	
Modulations	QPSK, 8 PSK, 16 QAM, 64 QAM	
Frequency error	±10 Hz + ref freq accuracy	99% confidence level
Residual EVM (RMS)	2.0% (typical)	P-CCPCH slot and 1 channel
Time error (Tau)	±0.2 µs (typical)	External trigger
Spreading factor	Auto (DL, UL), 1, 2, 4, 8, 16	

Measurements

Option 025

Channel power	Lowest reference power	(TS [0 to 6], DwPTS, UpPTS)	EVM RMS, EVM peak	Max active code power	***Auto measure***
Channel power	Highest reference power	Data power left	Peak CDE	Avg active code power	Channel power
Spectral density	Abs power at defined range	(TS [0 to 6], DwPTS, UpPTS)	Frequency error	Max inactive code power	Occupied bandwidth
Peak to average power	Rel power at defined range	***Midamble power***	I/Q origin offset	Avg inactive code power	Spectrum emission mask
Occupied bandwidth	***Spurious emissions***	(TS [0 to 6], DwPTS, UpPTS)	Time offset	***Code error***	ACLR
Occupied bandwidth	Peak frequency at defined range	Data power right	***Midamble power***	Code power and error	Multi-ACLR
Integrated power	Peak level at defined range	(TS [0 to 6], DwPTS, UpPTS)	Slot power	Individual code EVM and its constellation	Slot power
Occupied power	***Power vs. time (slot)***	Time offset	DwPTS power	Data format	DwPTS power
Spectrum emission mask	Slot power	(TS [0 to 6], DwPTS, UpPTS)	Midamble power (1 to 16)	Slot, DwPTS power	UpPTS power
Reference power	DwPTS power	***Power vs. time (mask)***	***Code power***	No. of active code	On/off slot ratio
Peak level at defined range	UpPTS power	Slot power	Abs/Rel code power	Scramble code	Frequency error
ACLR	On/off slot ratio	On/off slot ratio	Individual code EVM and its constellation	Max active code power	EVM RMS
Reference power	Slot PAR	Off power	Data format	Avg active code power	Peak CDE
Abs power at defined range	DwPTS code	***Timogram***	Slot power, DwPTS power	Max inactive code power	Max inactive power
Rel power at defined range	***Power vs. time (frame)***	***Constellation***	No. of active code	Avg inactive code power	Scramble code
Multi-ACLR	Slot power	Rho	Scramble code	Peak CDE and peak active CDE	

Option 045

Sync-DL ID scanner (32)	Pilot dominance	Pilot dominance	Pilot dominance	Pilot dominance	DwPTS Power
Scramble code group	***Sync-DL ID vs. Tau (up to 6)***	***Sync-DL ID multipath***	***Sync-DL ID analyzer***	EVM, frequency error	
Ec/Io, Tau	ID, power, Ec/Io, Tau	Ec/Io, Tau	DwPTS power, Ec/Io trend	Ec/Io, CINR	
DwPTS power	DwPTS power	DwPTS power	DwPTS power	***Route map***	

Longitude, latitude, and satellite in all screens

Mobile WiMAX Signal Analyzer (Options 026 and 046)

General Parameters					
Frequency range	2.1 GHz to 2.7 GHz 3.4 GHz to 3.85 GHz				
Input signal level	–40 to +20 dBm				
Channel power accuracy	±1.0 dB (typical)				
Supported bandwidth	7 MHz, 8.75 MHz, and 10 MHz				
Frequency error	±10 Hz + reference-frequency accuracy			99% confidence level	
Residual EVM (RMS)	1.5% (typical)				
Measurements					
Option 026					
Channel power	***Spurious emissions***	***Constellation***	Max, min, avg power	***Auto measure***	Spectral flatness
Channel power	Peak frequency at defined range	Channel power	***EVM vs. subcarrier***	Channel power	Frequency error
Spectral density	Peak level at defined range	RCE RMS, RCE peak	RCE RMS, RCE peak	Occupied bandwidth	RCE RMS
Peak to average power	***Power vs. time (frame)***	EVM RMS, EVM peak	EVM RMS, EVM peak	Spectrum emission mask	RCE peak
Occupied bandwidth	Channel power	Frequency error	Segment ID, cell ID	Spurious emission mask	EVM RMS
Occupied bandwidth	Frame average power	Time offset	Preamble index	Preamble power	EVM peak
Integrated power	Preamble power	Segment ID, cell ID	***EVM vs. symbol***	DL burst power	***Power statistics CCDF***
Occupied power	DL burst power	Preamble index	RCE RMS, RCE peak	UL burst power	
Spectrum emission mask	UL burst power	***Spectral flatness***	EVM RMS, EVM peak	Frame average power	
Reference power	I/Q origin offset	Average subcarrier power	Segment ID, cell ID	Time offset	
Peak level at defined range	Time offset	Subcarrier power variation	Preamble index	I/Q origin offset	
Option 046					
Preamble scanner (up to 6)	Time offset	Relative power, delay	Preamble power	Preamble	Preamble power
Total preamble power	***Multipath profile***	Preamble power trend	Frame avg power	Cell ID, sector ID	
Preamble, relative power	Total preamble power	***Preamble power trend***	Relative power	Time offset	
Cell ID, sector ID	Multipath power	Relative power trend	C/I	***Route map***	

Longitude, latitude, and satellite in all screens

LTE/LTE-Advanced—FDD Signal Analyzer (Options 028/030 and 048)

General Parameters			
Frequency range	Band 1 to 14, 17 to 26		
Input signal level	–40 to +20 dBm		
Channel power accuracy	±1.0 dB (typical)		
Supported bandwidths	1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, and 20 MHz		
Frequency error	±10 Hz + reference-frequency accuracy	99% confidence level	
Residual EVM (RMS)	2.0% (typical)	Data EVM	

Measurements

Option 028/030

Channel power	***Power vs. time (frame)***	***Control channel***	Data EVM RMS, peak	Antenna 1 RS power and EVM	PDSCH/Data* 64 QAM EVM
Channel power	Frame average power	Control channel summary (P-SS, S-SS, PBCH, PCFICH, PHICH, PDCCH, RS, MBSFN*)	RS EVM RMS, peak	Antenna 2 RS power and EVM**	Data EVM RMS, peak
Spectral density	Subframe power		Cell, group, sector ID		RS, P-SS, S-SS EVM
Peak to average power	First slot power		***Frame***	Antenna 3 RS power and EVM**	RS, P-SS, S-SS power
Occupied bandwidth	Second slot power		MBSFN*		PBCH power
Occupied bandwidth	Cell ID, I/Q origin offset	EVM, relative or absolute power, modulation type	Frame summary table (P-SS, S-SS, PBCH, PCFICH, PHICH, PDCCH, RS, MBSFN*, PDSCH/Data* QPSK, PDSCDH/Data* 16 QAM, PDSCH/Data* 64 QAM)	***Data allocation map***	Subframe power
Integrated power	Time offset			Data allocation vs frame	OFDM power
Occupied power	***Constellation***	Each control channels'		Resource block power	Time error
Spectrum emission mask	MBSFN*	I/Q diagram		OFDM symbol power	I/Q origin offset
	RS TX power	Modulation format		Data utilization	***Carrier aggregation***
Reference power	PDSCH/Data* QPSK EVM	Frequency error		Data allocation vs subframe	Component carriers: up to 5
Peak level at defined range	PDSCH/Data* 16 QAM EVM	I/Q origin offset	EVM, relative or absolute power, modulation type	Resource block power	
ACLR	PDSCH/Data* 64 QAM EVM	EVM RMS, EVM peak			
Reference power	Data EVM RMS	***Subframe***	Frame average power	Data utilization	Subframe power
Abs power at defined range	Data EVM peak	MBSFN*	OFDM symbol power	***Auto measure***	P-SS, S-SS, PBCH, RS power and EVM
	Frequency error	Subframe summary table (P-SS, S-SS, PBCH, PCFICH, PHICH, PDCCH, RS, MBSFN*, PDSCH/Data* QPSK, PDSCH/Data* 16 QAM, PDSCH/Data* 64 QAM)	Frequency error	Channel power	
Rel power at defined range	Time error		I/Q origin offset	Occupied bandwidth	PDSCH/Data* QPSK power and EVM
Multi-ACLR	***Data channel***		EVM RMS, peak	Spectrum emission mask	
Lowest reference power	MBSFN*		Data EVM RMS, peak	ACLR	PDSCH/Data* 16 QAM power and EVM
Highest reference power	Resource block power		Cell, group, sector ID	Multi-ACLR	
Abs power at defined range	I/Q diagram		***Time alignment error***	Spurious emission mask	PDSCH/Data* 64 QAM power and EVM
	RB power	EVM, relative or absolute power, modulation type	Time alignment error trend	Frame average power	
Rel power at defined range	Modulation format			Time alignment error	Cell ID
Spurious emissions	I/Q origin offset	Subframe power	Time alignment error	Frequency error	Frequency error
Peak frequency at defined range	EVM RMS, EVM peak	OFDM symbol power	RS power difference	MBSFN*	Time alignment error
		Frequency, time error	Antenna 0 RS power and EVM	PDSCH/Data* QPSK EVM	Antenna port
Peak level at defined range				PDSCH/Data* 16 QAM EVM	***Power statistics CCDF***

Option 048

Channel scanner (up to 6)	***ID scanner (up to 6)***	***Multipath profile***	Control channel table	PMCH subframe power*	***Route map***
Frequency or channels	RSRP/RSRQ dominance	Cell, group, sector ID	(P-SS, S-SS, PBCH, PCFICH, RS 0, RS 1, RS 2**, RS 3**, MBSFN RS*)	Time alignment error	RSRP
Cell, group, sector ID	S-SS RSSI dominance	Ant 0 RS Ec/Io, delay		Time offset	RSRQ
Channel power	S-SS Ec/Io dominance	Ant 1 RS Ec/Io, delay		***Datagram***	RS-SINR
RSRP/RSRQ	Cell, group, sector ID	Ant 2 RS Ec/Io**, delay**	Absolute power	Datagram	S-SS RSSI
RS-SINR	RSRP/RSRQ	Ant 3 RS Ec/Io**, delay**	Relative power	Resource block power	P-SS/S-SS Power
Antenna port	RS-SINR/S-SS RSSI	***Control channel***	EVM RSM, phase	Data utilization	S-SS Ec/Io
	P-SS/S-SS Power	RS power trend	Frequency error		
	S-SS Ec/Io	Cell, group, sector ID			

Longitude, latitude, and satellite in all screens

*Measurement is performed when MBMS is enabled.

**Measurement is performed when option 030 is enabled.

LTE/LTE-Advanced— TDD Signal Analyzer (Option 029/031 and 049)

General Parameters			
Frequency range	Band 33 to 43		
Input signal level	–40 to +20 dBm		
Channel power accuracy	±1.0 dB (typical)		
Supported bandwidth	1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, and 20 MHz		
Frequency error	±10 Hz + reference-frequency accuracy	99% confidence level	
Residual EVM (RMS)	2.0% (typical)	Data EVM	

Measurements

Option 029/031

Channel power	***Spurious emissions***	Data EVM peak	***Subframe***	Antenna 3 RS power and EVM**	PDSCH/Data* 64 QAM EVM
Channel power	Peak frequency at defined range	Frequency error	MBSFN*		
Spectral density		Time error	Subframe summary table (P-SS, S-SS, PBCH, PCFICH, PHICH, PDCCH, RS, MBSFN*, PDSCH/Data* QPSK, PDSCH/Data* 16 QAM, PDSCH/Data* 64 QAM)	Cell, group, sector ID	Data EVM RMS, peak
Peak to average power	Peak level at defined range	***Data channel***		***Data allocation map***	RS, P-SS, S-SS EVM
Occupied bandwidth		MBSFN*		Data allocation vs frame	RS, P-SS, S-SS power
Occupied bandwidth	***Power vs. time (frame)***	Resource block power		Resource block power	PBCH power
Integrated power	Frame average power	I/Q diagram		OFDM symbol power	Subframe power
Occupied power	Subframe power	RB power		Data utilization	OFDM power
Spectrum emission mask	First slot power	Modulation format	EVM, relative or absolute power, modulation type	Data allocation vs subframe	Time error
Reference power	Second slot power	I/Q origin offset			I/Q origin offset
Peak level at defined range	Cell ID, I/Q origin offset	EVM RMS, EVM peak	Subframe power	Resource block power	***Carrier aggregation****
	Time offset	***Control channel***	OFDM symbol power	Data utilization	Component carriers: up to 5
ACLR	***Power vs. time (slot)***	Control channel summary (P-SS, S-SS, PBCH, PCFICH, PHICH, PDCCH, RS, MBSFN*)	Frequency, time error	***Auto measure***	
Reference power	Slot average power		Data EVM RMS, peak	Channel power	Subframe power
Abs power at defined range	Transient period length		RS EVM RMS, peak	Occupied bandwidth	P-SS, S-SS, PBCH, RS power and EVM
	Off power		Cell, group, sector ID	Spectrum emission mask	
Rel power at defined range	***Constellation***	EVM, relative or absolute power, modulation type	***Time alignment error***	ACLR	PDSCH/Data* QPSK power and EVM
	MBSFN*		Time alignment error trend	Mult-ACLR	
Multi-ACLR	RS TX power	Each control channels'	Time alignment error	Spurious emission mask	PDSCH/Data* 16 QAM power and EVM
Lowest reference power	PDSCH/Data* QPSK EVM	I/Q diagram	RS power difference	Slot average power	
Highest reference power	PDSCH/Data* 16 QAM EVM	Modulation format	Antenna 0 RS power and EVM	Off power	PDSCH/Data* 64 QAM power and EVM
Abs power at defined range		Frequency error		Transition period	
	PDSCH/Data* 64 QAM EVM	I/Q origin offset	Antenna 1 RS power and EVM	Time alignment error	Cell ID
Rel power at defined range		EVM RMS, EVM peak		MBSFN*	Frequency error
	Data EVM RMS		Antenna 2 RS power and EVM**	PDSCH/Data* QPSK EVM	Time alignment error
				PDSCH/Data* 16 QAM EVM	Antenna port
					Power statistics CCDF

Option 049

Channel scanner (up to 6)	***ID scanner (up to 6)***	***Multipath profile***	***Control channel***	EVM RSM, phase	***Route map***
	RSRP/RSRQ dominance	Cell, group, sector ID	RS power trend	Frequency error	RSRP
Frequency or channels	S-SS RSSI dominance	Ant 0 RS Ec/Io, delay	Cell, group, sector ID	PMCH subframe power*	RSRQ
Cell, group, sector ID	S-SS Ec/Io dominance	Ant 1 RS Ec/Io, delay	Control channel table (P-SS, S-SS, PBCH, PCFICH, RS 0, RS 1, RS 2**, RS 3**, MBSFN RS*)	Time alignment error	RS-SINR
Channel power	Cell, group, sector ID	Ant 2 RS Ec/Io**, delay**		Time offset	S-SS RSSI
RSRP/RSRQ	RSRP/RSRQ	Ant 3 RS Ec/Io**, delay**		***Datagram***	P-SS, S-SS power
RS-SINR	RS-SINR/S-SS RSSI			Datagram	S-SS Ec/Io
Antenna port	P-SS/S-SS power		Absolute power	Resource block power	
	S-SS Ec/Io		Relative power	Data utilization	

Longitude, latitude, and satellite in all screens

*Measurement is performed when MBMS is enabled.

**Measurement is performed when option 031 is enabled.

Bluetooth Connectivity (Option 006)

Personal Area Network (PAN)
File Transfer Profile (FTP)

General Information

Inputs and Outputs		
RF In Connector Impedance Damage level	Spectrum analyzer Type-N, female 50 Ω (nominal) >+40 dBm, ±50 V DC (nominal)	
External Trigger, GPS Connector Impedance	 SMA, female 50 Ω (nominal)	
External Ref Connector Impedance Input frequency Input range	 SMA, female 50 Ω (nominal) 10 MHz, 13 MHz, 15 MHz –5 to +5 dBm	
USB USB host[1] USB client[2]	 Type A, 1 port Type B, 1 port	
LAN	RJ45, 10/100Base-T	
GPIO	RJ45	
Audio jack	3.5 mm headphone jack	
External power	5.5 mm barrel connector	
Speaker	Built-in speaker	
Display		
Type	Resistive touch screen (as of serial number BEK11791)	
Size	8 inch, LED backlight	
Resolution	800 x 600	
Power		
External DC input	12 to 19 V DC	
Power consumption	32.5 W	45 W maximum (when charging battery)

Battery	
Type	10.8 V, 7800 mA/hr (Lithium ion)
Operating time	>3 hours (typical)
Charge time	2.5 hours (80%), 4 hours (100%)
Charging temperature	0 to 45°C (32 to 113°F) ≤85% RH
Discharging temperature	–10 to 60°C (14 to 140°F) ≤85% RH
Storage temperature[3]	–20 to 50°C (–4 to 122°F) ≤85% RH (noncondensing)
Data Storage	
Internal[4]	Minimum 20 MB
External[5]	Limited by size of USB flash drive
Environmental	
Operating Temperature	
AC Power	0 to 40°C (32 to 104°F) with no derating
Battery	0 to 40°C (32 to 104°F) at charging –10 to 55°C (14 to 131°F) at discharging
Maximum humidity	85% RH (noncondensing)
Shock and vibration	MIL-PRF-28800F class 2
Storage temperature[6]	–30 to 71°C (–22 to 160°F)
EMC	
EN 61326-2-1 (complies with European EMC)	
Size and Weight (standard configuration)	
Weight (with battery)	<4 kg (8.8 lb)
Size (W x H x D)	295 x 195 x 82 mm (11.6 x 7.7 x 3.2 in)
Warranty	
2 years	
Calibration Cycle	
1 year	

1. Connects flash drive and power sensor
2. Connects to PC for data transfer
3. 20 to 85% RH, store battery pack in low-humidity environment; extended exposure to temperature above 45°C could significantly degrade battery performance and life
4. Up to 700 traces
5. Supports USB 2.0 compatible memory devices
6. With the battery pack removed

Ordering Information

Description	Part Number
Standard CellAdvisor Signal Analyzer	
100 kHz to 4 GHz Spectrum Analyzer 10 MHz to 4 GHz RF Power Meter (internal mode)	JD748A
Options NOTE: Upgrade options for the JD748A use the designation JD748AU before the respective last three-digit option number.	
Bluetooth connectivity[1]	JD748A006
GPS receiver and antenna	JD748A010
Interference analyzer[2, 3]	JD748A011
Channel scanner	JD748A012
cdmaOne/cdma2000 signal analyzer[4]	JD748A020
EV-DO signal analyzer[5]	JD748A021
GSM/GPRS/EDGE signal analyzer[4]	JD748A022
WCDMA/HSPA+ signal analyzer[4]	JD748A023
TD-SCDMA signal analyzer[4]	JD748A025
Mobile WiMAX signal analyzer[4]	JD748A026
LTE-FDD signal analyzer[4]	JD748A028
LTE-TDD signal analyzer[4]	JD748A029
LTE-Advanced—FDD signal analyzer[4, 6]	JD748A030
LTE-Advanced—TDD signal analyzer[4, 7]	JD748A031
cdmaOne/cdma2000 OTA analyzer[4]	JD748A040
EV-DO OTA analyzer[3, 8]	JD748A041
GSM/GPRS/EDGE OTA analyzer[3, 8]	JD748A042
WCDMA/HSPA+ OTA analyzer[3, 8]	JD748A043
TD-SCDMA OTA analyzer[3, 8]	JD748A045
Mobile WiMAX OTA analyzer[3, 8]	JD748A046
LTE-FDD OTA analyzer[3, 8]	JD748A048
LTE-TDD OTA analyzer[3, 8]	JD748A049
Standard Accessories	
AC/DC power adapter[9]	G710550326
Cross LAN cable (1.5 m)[9]	G710550335
USB A to B cable (1.8 m)[9]	GC73050515
>1 GB USB memory[9]	GC72450518
Rechargeable lithium ion battery[9]	G710550325
Automotive cigarette lighter 12 V DC adapter[9]	G710550323
Stylus[9]	G710550316
JD740A series user's manual and application software — CD	JD740A361

Description	Part Number
Optional RF Cables	
1.5 m (4.92 ft) RF cable, DC to 18 GHz, Type-N(m) to SMA(m), 50 Ω	G710050533
1.5 m (4.92 ft) RF cable, DC to 18 GHz, Type-N(m) to QMA(m), 50 Ω	G710050534
1.5 m (4.92 ft) RF cable, DC to 18 GHz, Type-N(m) to SMB(m), 50 Ω	G710050535
RF cable DC to 6 GHz Type-N(m) to DIN(f), 1.5 m	G710050536
RF cable DC to 8 GHz Type-N(m) to Type-N(m), 1.0 m	G700050530
RF cable DC to 8 GHz Type-N(m) to Type-N(f), 1.5 m	G700050531
RF cable DC to 8 GHz Type-N(m) to Type-N(f), 3.0 m	G700050532
Phase-stable RF cable with grip DC to 6 GHz Type-N(m) to Type-N(f), 1.5 m	G700050540
Phase-stable RF cable with grip DC to 6 GHz Type-N(m) to DIN(f), 1.5 m	G700050541
Optional Omni Antennas	
RF omni antenna Type-N(m), 806 MHz to 896 MHz	G700050353
RF omni antenna Type-N(m), 870 MHz to 960 MHz	G700050354
RF omni antenna Type-N(m), 1.71 GHz to 2.17 GHz	G700050355
RF omni antenna Type-N(m), 720 MHz to 800 MHz	G700050356
RF omni antenna Type-N(m), 2.3 GHz to 2.7 GHz	G700050357
Optional Yagi Antennas	
RF Yagi antenna Type-N(f), 806 MHz to 896 MHz, 10.2 dBd[10]	G700050364
RF Yagi antenna Type-N(f), 866 MHz to 960 MHz, 10.2 dBd[10]	G700050365
RF Yagi antenna Type-N(f), 1.75 GHz to 2.39 GHz, 9.8 dBd[10]	G700050363
RF Yagi antenna Type-SMA(f), 700 MHz to 4 GHz, 1.85 dBd[11]	G700050366
Optional RF Power Sensors	
Directional power sensor (peak and average power) Frequency: 300 MHz to 3.8 GHz Power: average 0.15 to 150 W, peak 4 to 400 W	JD731B
Directional power sensor (peak and average power) Frequency: 150 MHz to 3.5 GHz Power: average/peak 0.1 to 50 W	JD733A
Terminating power sensor (average power) Frequency: 20 MHz to 3.8 GHz Power: –30 to +20 dBm	JD732B
Terminating power sensor (peak power) Frequency: 20 MHz to 3.8 GHz Power: –30 to +20 dBm	JD734B
Terminating power sensor (peak and average power) Frequency: 20 MHz to 3.8 GHz Power: –30 to +20 dBm	JD736B

Ordering Information (Continued)

Description	Part Number
Optional Optical Power Meters	
USB optical power meter with software, 2.5 and 1.25 mm interfaces, 30-inch USB extender, and carrying pouch	MP-60A
USB optical power meter—high power with software, 2.5 and 1.25 mm interfaces, 30-inch USB extender, and carrying pouch	MP-80A
Optional RF Adapters	
Adapter Type-N(m) to DIN(f), DC to 7.5 GHz, 50 Ω	G700050571
Adapter DIN(m) to DIN(m), DC to 7.5 GHz, 50 Ω	G700050572
Adapter Type-N(m) to SMA(f) DC to 18 GHz, 50 Ω	G700050573
Adapter Type-N(m) to BNC(f), DC to 4 GHz, 50 Ω	G700050574
Adapter Type-N(f) to Type-N(f), DC to 18 GHz 50 Ω	G700050575
Adapter Type-N(m) to DIN(m), DC to7.5 GHz, 50 Ω	G700050576
Adapter Type-N(f) to DIN(f), DC to 7.5 GHz, 50 Ω	G700050577
Adapter Type-N(f) to DIN(m), DC to 7.5 GHz, 50 Ω	G700050578
Adapter DIN(f) to DIN(f), DC to 7.5 GHz, 50 Ω	G700050579
Adapter Type-N(m) to Type-N(m), DC to 11 GHz 50 Ω	G700050580
Adapter N(m) to QMA(f), DC to 6.0 GHz, 50 Ω	G700050581
Adapter N(m) to QMA(m), DC to 6.0 GHz, 50 Ω	G700050582
Optional Miscellaneous	
Attenuator 40 dB, 100 W, DC to 4 GHz (unidirectional)	G710050581
Soft carrying case	JD74050341
Hard carrying case	JD71050342
Hard carrying case with wheels	JD70050342
CellAdvisor backpack carrying case	JD70050343

Description	Part Number
RF directional coupler, 700 MHz to 4 GHz, 30 dB, input/output; Type-N(m) to Type-N(f), tap off; Type-N(f)[12]	G710050585
RF Combiner, 700 MHz to 4 GHz, Type-N(f) to-Type-N(m)[12]	G710050586
4x1 RF combiner 700 MHz to 4 GHz, Type-N(f) to Type-N(m)[13]	G710050587
External battery charger	G710550324
JD740A series user's manual – printed version	JD740A362

1. Includes a pair of Bluetooth USB dongles with 5 dBi dipole antenna (JD70050006)
2. Recommend adding GPS receiver JD748A010
3. Recommend adding antennas G70005035x and/or G70005036x
4. Requires option 9
5. Requires options 9 and 20
6. Requires option 28
7. Requires option 29
8. Requires options 9 and 10
9. Standard accessories that can be purchased separately
10. Requires RF cable G700050530
11. Requires RF cable G710050533
12. Recommended for LTE testing
13. Recommended for LTE Advanced testing

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